

Notice of Allowability

Application No.

10/772,452

Examiner

Angela J. Martin

Applicant(s)

LEE ET AL.

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1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/4/07.
2. ☒ The allowed claim(s) is/are 1-46.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

Election/Restrictions

1. Claims 16, 17, 20, 23, 24, 27, 29, 30, 34, 36, 38, 45 are directed to an allowable species. Claims 1-15, 18, 19, 21, 22, 25, 26, 28, 31-33, 35, 37, 39-44, 46, previously withdrawn from consideration as a result of a restriction requirement, are hereby rejoined and fully examined for patentability.

Because all claims previously withdrawn from consideration have been rejoined, **the restriction requirement as set forth in the Office action mailed on 2/9/07 is hereby withdrawn.** In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

The Applicant claims a bipolar plate for a fuel cell, the bipolar plate including a flow field through which one of a fuel and an oxidant is allowed to flow, wherein the flow

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field has a length from inlet to outlet that is between three and eight times greater than the square root of the area of the bipolar plate.

A fuel cell comprising: a first bipolar plate having a fuel flow field; a second bipolar plate having an air flow field; and a membrane electrode assembly interposed between the first and second bipolar plates and in which reactions of a fuel and an oxidant take place, wherein the fuel flow field has a length from inlet to outlet that is between three and eight times greater than the square root of the area of the first bipolar plate, and the air flow field has a length that is between three and eight times greater than the square root of the area of the second bipolar plate.

A fuel cell comprising a first bipolar plate having a fuel flow field wherein the fuel flow field is formed in a reaction plate that protrudes above a surface of the first bipolar plate with a predetermined gap from the edge of the first bipolar plate; a second bipolar plate having an air flow field; and a membrane electrode assembly interposed between the first and second bipolar plates and in which reactions of a fuel and an oxidant take place, wherein the fuel flow field has a length from inlet to outlet that is between three and eight times greater than the square root of the area of the first bipolar plate, and the air flow field has a length from inlet to outlet that is between three and eight times greater than the square root of the area of the second bipolar plate.

A fuel cell comprising: a first bipolar plate having a fuel flow field; a second bipolar plate having an air flow field; and a membrane electrode assembly interposed between the first and second bipolar plates and in which reactions of a fuel and an oxidant take place, wherein the fuel flow field has a length from inlet to outlet that is between three

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and eight times greater than the square root of the area of the first bipolar plate, and the air flow field has a length from inlet to outlet that is between three and eight times greater than the square root of the area of the second bipolar plate, and wherein the flow field is formed in a reaction plate that is recessed from a surface of the first bipolar plate with a predetermined gap from the edge of the first bipolar plate.

In the prior art of record, *Fujii et al.*, U.S. Patent No. 6,406,809, teach a fuel cell comprising a first and second bipolar plate, having flow fields.

However, the prior art of record, taken either alone or in combination, fails to disclose or render obvious, fuel flow fields or air flow fields with a length from inlet to outlet between three and eight times greater than the square root of the area of the first or second bipolar plates.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is 571-272-1288. The examiner can normally be reached on Monday-Friday from 9:00 am to 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJM


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER